



# Civil Forensics

## Presentation to the National Academies

Dr. John E. Moalli  
Exponent  
Failure Analysis Associates



# Outline

- Civil v. Criminal Forensics
- Typical Civil cases
- Challenges in the courtroom



# Civil v. Criminal Forensics

- Loss of life often involved
- Calls for high level science
- Human body often used as evidence
- Different type of defendant
- Different stakes
- Different burden of proof

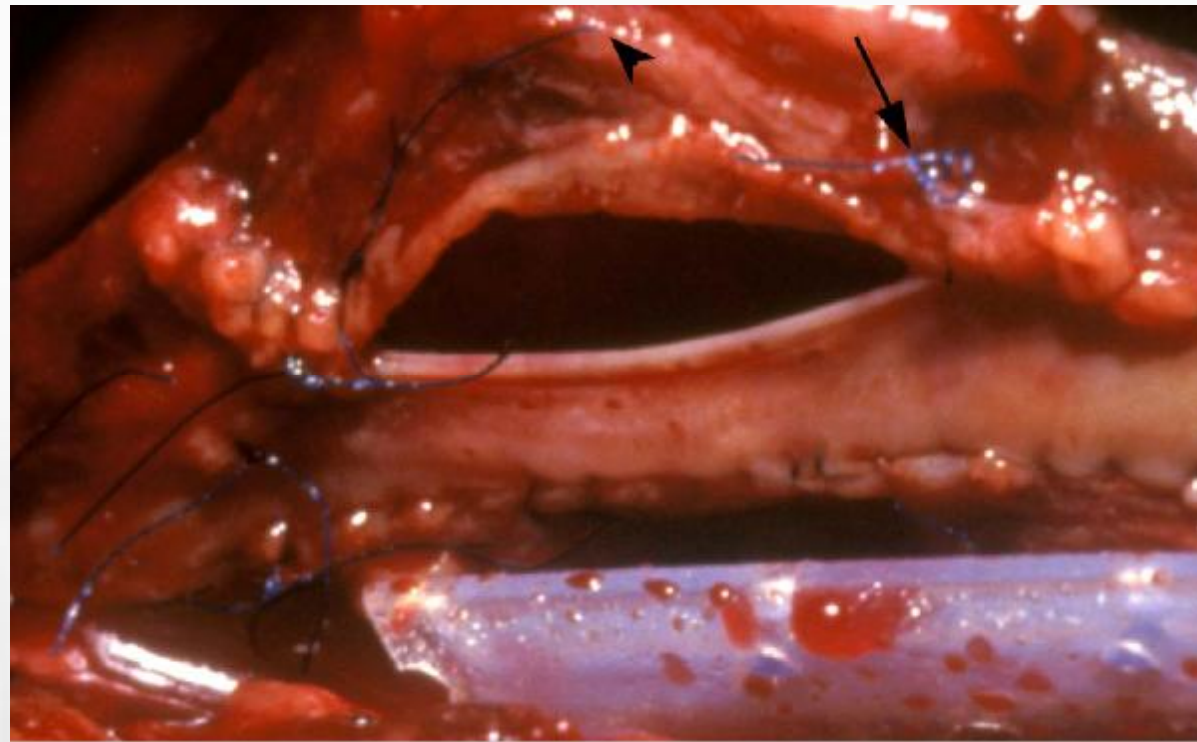
*Should the quality of science scale with the burden of proof ?*



# Typical Civil Forensic Cases

- Product liability
- Personal injury
- Intellectual property

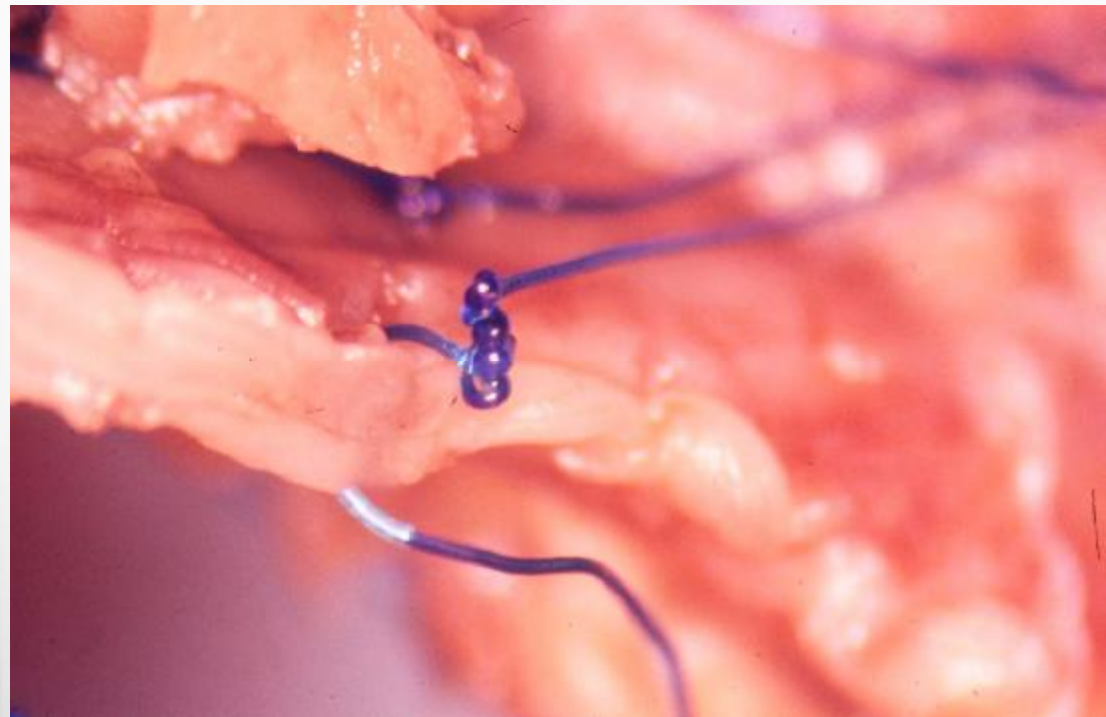
# Civil Forensics



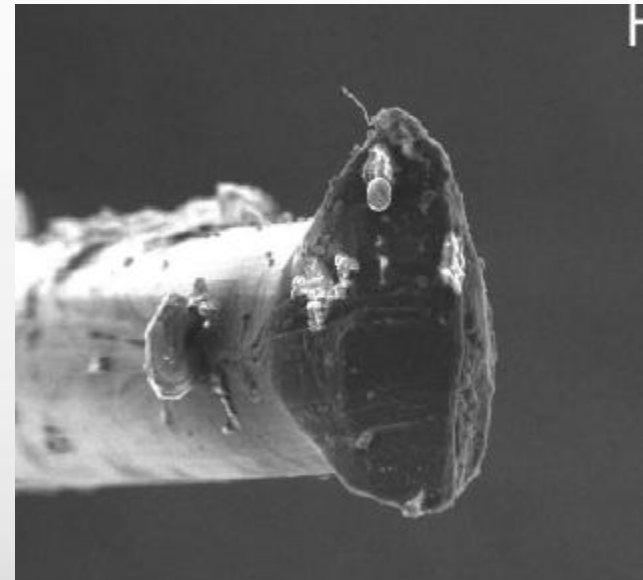
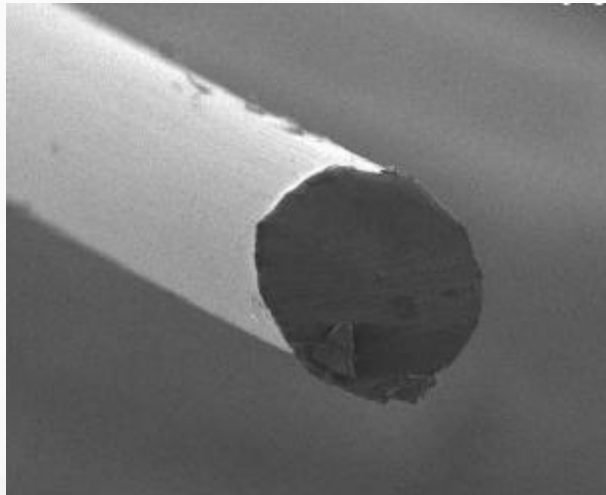
# Civil Forensics



# Civil Forensics



# Civil Forensics





# Civil Forensics



QuickTime™ and a  
YUV420 codec decompressor  
are needed to see this picture.



# Challenges in the Courtroom

- Junk science
- State v. Federal Court
  - Frye v. Daubert
- Relevant qualifications
  - Science is changing faster than the bench
  - MD or Biomechanics ?

# Challenges in the Courtroom

## Computer animations

- Engineering animation v. cartoon



QuickTime™ and a  
Cinepak decompressor  
are needed to see this picture.



# Challenges in the Courtroom

- Computer analysis programs
  - Accident reconstruction
  - Stress analysis
  - Fire spread
- Standardization
  - ASTM
  - NFPA

# Challenges in the Courtroom



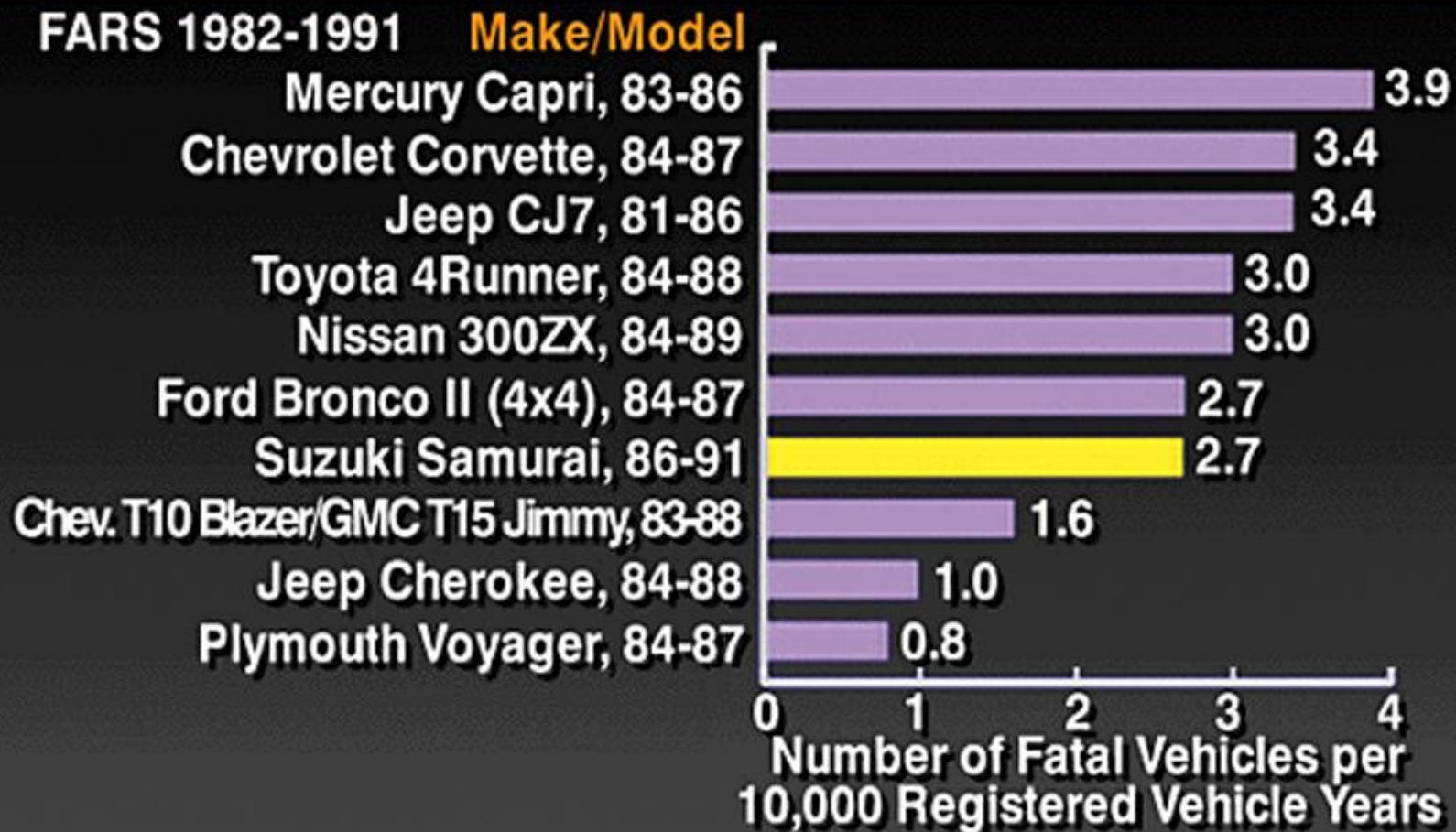
- Analysis based on Federal Data
  - NEISS
  - FARS
  - NFIRS

# Challenges in the Courtroom

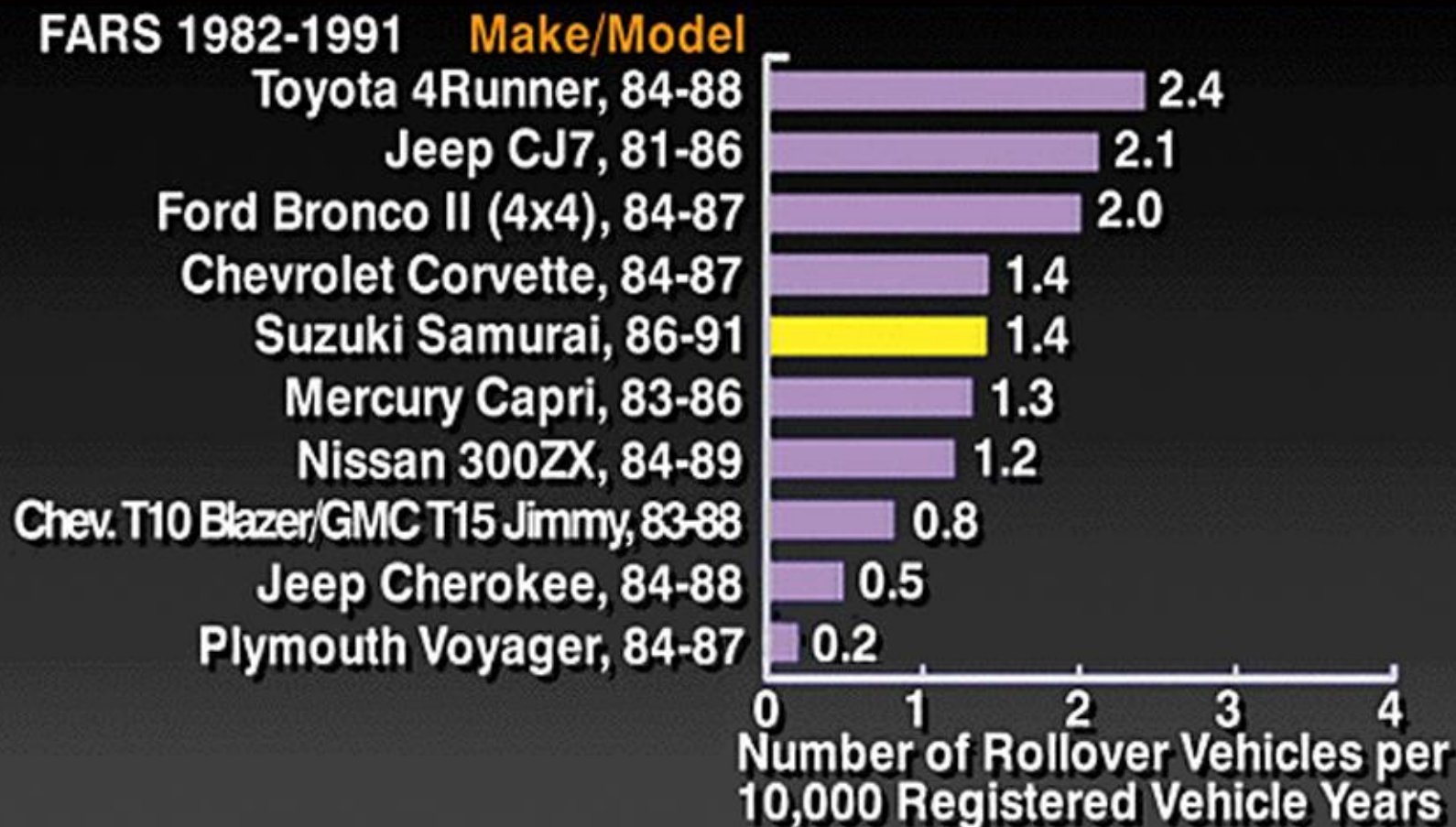


QuickTime™ and a  
YUV420 codec decompressor  
are needed to see this picture.

# Fatal Vehicle Rate



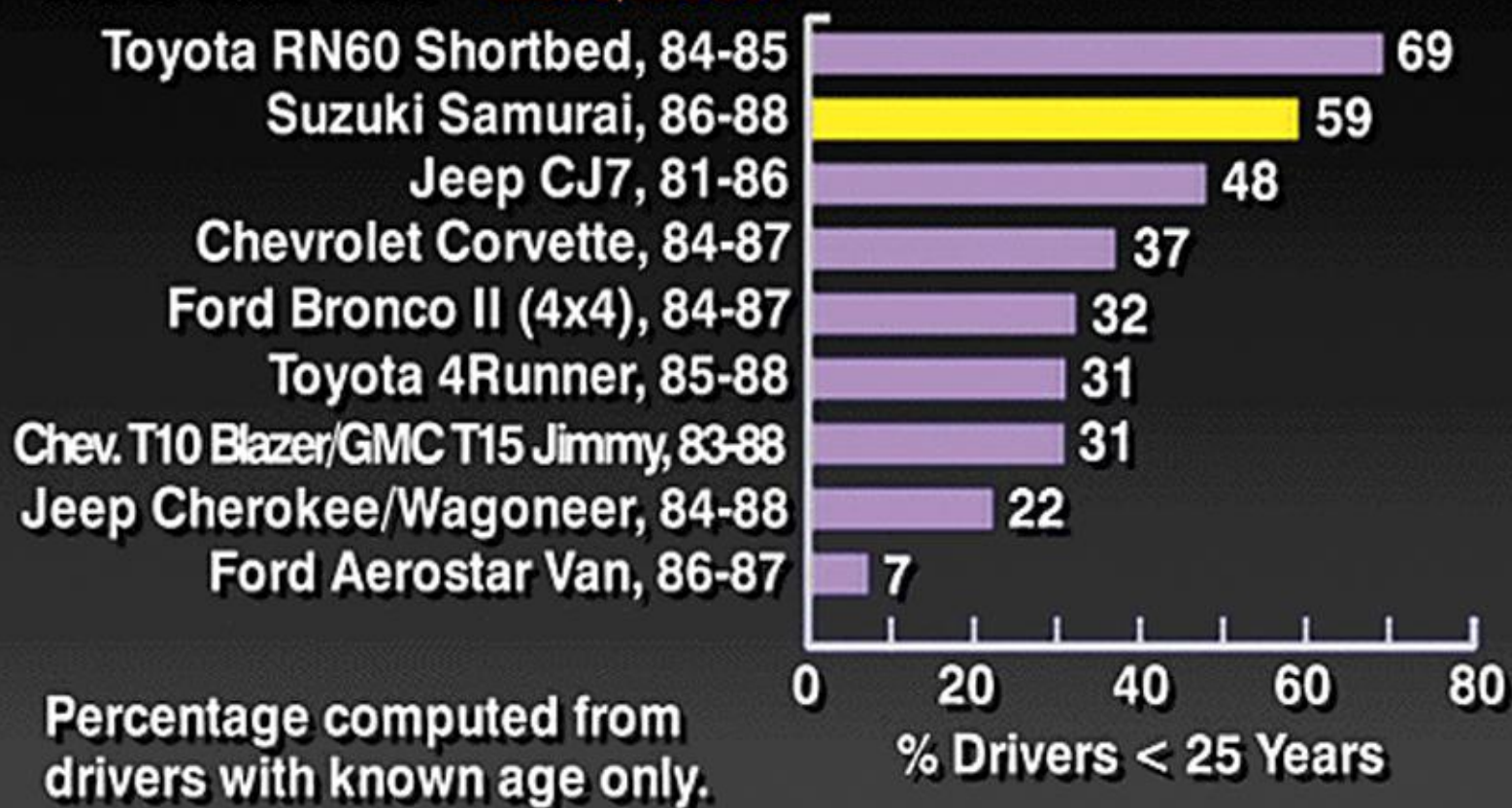
# Fatal Rollover Rate



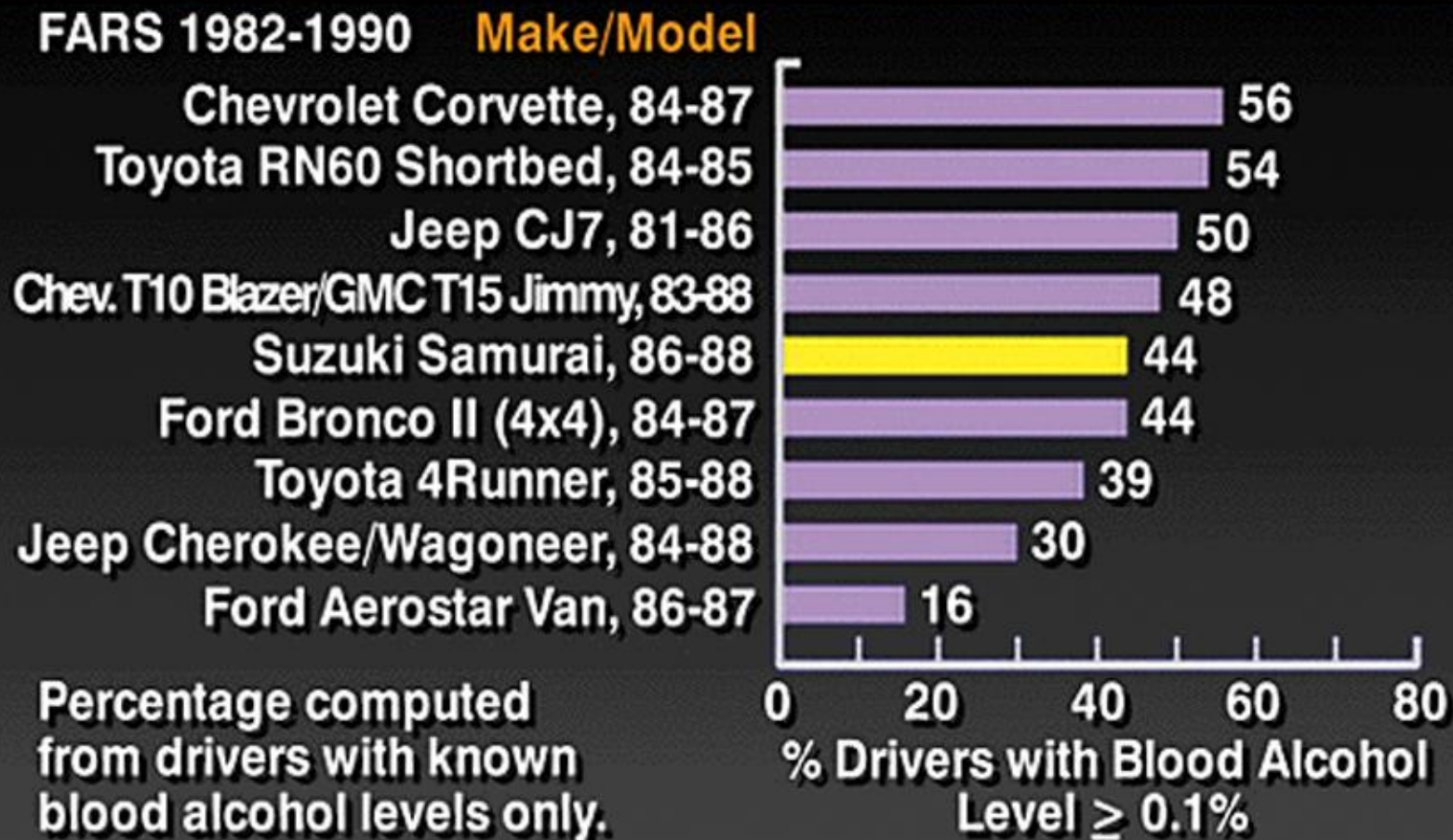


# Fatal Vehicle Drivers Less Than 25 Years

FARS 1982-1990 **Make/Model**

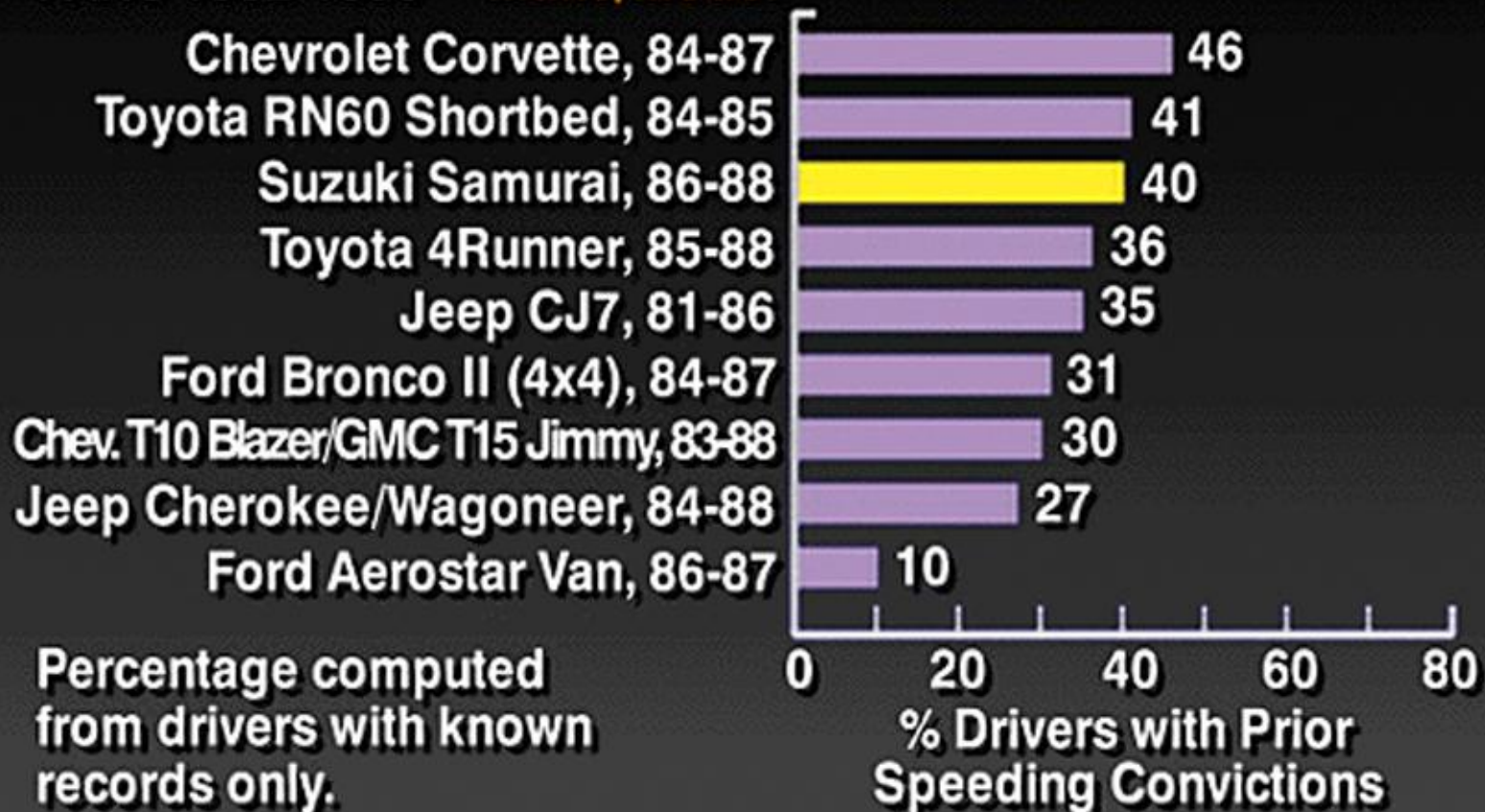


# Fatal Vehicle Drivers with Blood Alcohol $\geq 0.1\%$



# Fatal Vehicle Drivers with Prior Speeding Convictions

FARS 1982-1990 **Make/Model**





# Challenges in the Courtroom

- New Science
  - Challenging investigations may demand novel experimental techniques
  - Some judges will exclude solely on this basis
- Questions?